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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Patent of:

SMITH et al.

Patent No.: 6,858,068 B2

Issued: February 22, 2005

Confirmation No.: 8244

Atty. File No.: 50001-00025

For: "DEVICE FOR PROVIDING
MICROCLIMATE CONTROL"

REQUEST FOR CERTIFICATE OF
CORRECTION OF PATENT FOR
PTO MISTAKE
(37 C.F.R. 1.322(a))

<p>CERTIFICATE OF MAILING</p> <p>I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450 ON <u>3-11-05</u></p> <p>MARSH FISCHMANN & BREYFOGLE LLP</p> <p>By: <u>[Signature]</u></p>

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Certificate
MAR 22 2005
of Correction

Dear Sir:

This is a request for a Certificate of Correction for PTO mistake under 37 C.F.R. 1.322(a). The errors in the patent are obvious typographical errors or omissions and the correct wording can be found in the original specification at Page 8, line 3, and Page 29, line 4, or the Response to Office Action dated July 23, 2004, at Page 4, line 18. Attached is form PTO 1050 in duplicate along with copies of documentation that unequivocally supports patentee's assertion(s).

Respectfully submitted,

MARSH FISCHMANN & BREYFOGLE LLP

By: [Signature]
David F. Dockery
Registration No. 34,323
3151 South Vaughn Way, Suite 411
Aurora, Colorado 80014
(303) 338-0997

Date: March 11, 2005

MAR 23 2005

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,858,068 B2
DATED : February 22, 2005
INVENTOR(S): SMITH et al.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Title Page

Section (57), line 4, delete "micrlimate" and insert therefor --micro-climate--.

Column 5

Line 33, delete "T mperature", and insert therefor --Temperature--.

Column 13

Line 25, after "perpendicular", insert --to--.

MAILING ADDRESS OF SENDER:

David F. Dockery
Registration No. 34,323
MARSH FISCHMANN & BREYFOGLE LLP
3151 South Vaughn Way, Suite 411
Aurora, Colorado 80014
303-338-0997

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Table 1

Phase-change Material	Transition Temperature (°C)	Cooling density (J/g)	Cooling density (J/cm ³)
H ₂ O	0	333	306
CaCl ₂ ·6H ₂ O	30	171	256
Na ₂ SO ₄ ·10H ₂ O	32	254	377
Na ₂ HPO ₄ ·12H ₂ O	35	281	405
Na ₂ S ₂ O ₃ ·5H ₂ O	48	201	322
NaCH ₃ COOH·3H ₂ O	58	190	245
Ba(OH) ₂ ·8H ₂ O	78	267	581
C ₁₈ H ₃₈	28	244	189

In order to achieve a high energy density, the phase-change material is preferably prepared in such a way as to obtain a high packing density that is over 80% of the density of a single crystal. Means used to achieve this high density can include high-pressure uniaxial compaction, repeated infiltration of the crystals with saturated liquid solutions of the salt, and crystal habit modification during precipitation.

The desiccant and phase-change material are preferably proximal to each other in the water extraction device and in thermal communication such that the phase-change material can extract the heat of adsorption from the desiccant. This may be achieved by interspersing the phase-change material in the desiccant or by placing the desiccant proximal to the phase-change material without interspersing, as described below.

It is not always desirable to mix the desiccant and the phase-change material, especially at or above the transition temperature of the phase-change material. When the phase-change material is in a liquid or gas phase, as is the case above its transition temperature, it may cause unwanted chemical reactions with the desiccant or lessen thermal communication with the desiccant by reducing the amount of phase-change material in contact with the desiccant. In such a case, a fluid diffusion barrier may be employed to prevent the phase-change material from contacting the desiccant or from changing its shape.

ABSTRACT

A device for adsorbing water vapor from a gas stream. The device can be incorporated with an enclosure or garment in such a manner so as to enable water vapor to be adsorbed, thereby decreasing the relative humidity in the micro-climate surrounding the user. The water adsorption device is light-weight, has a high mass and volumetric energy capacity. A desiccant material is included within the water adsorption device to adsorb water vapor and a phase-change material is located in thermal communication with the desiccant to increase the loading capacity of the desiccant and maintain a cool gas stream by extracting the heat of adsorption from the desiccant.

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Please replace the paragraph beginning on Page 20, line 20 and ending on Page 21, line 9 with the following amended paragraph:

This device includes 12 layers of modified carbon, 7 PCM bags, and 12 layers of flow channel material. All layers are a finished size of about 25 cm x 25 cm. The carbon sheets each weigh about 30 grams, 50% of which is carbon. For a 50% LiCl / 50% carbon loading, a total of 15 grams of LiCl is impregnated into each sheet. The 15 grams of LiCl is dissolved into 35 ml of -50% deionized water / 50% methanol. The carbon sheet is pre-treated with 2 ml of 50% deionized water / 50% methanol on each side. While the sheet is still moist, a total of 12 ml of the salt/water/alcohol mixture is wicked into the sheet. Then the sheet is placed in a 50°C oven for at least two hours to dry. The sheet is then wicked a second time (after pre-treating) with about 12 ml of salt/water/alcohol mixture. The sheet is again dried at 50°C for at least two hours, then again pre-treated and wicked with the remaining solution. The sheet is now ready for final drying at 70°C in a vacuum oven overnight. The PCM bags are made of Rexam. The measurements from inside seal to inside seal are about 25 cm x 25 cm. Five of these bags are filled with 424 grams of sodium sulfate decahydrate. The other two bags are filled with 212 grams of the PCM for the end pieces. Twelve pieces of flow channel material are cut and arranged in pairs so that the weave on one layer is perpendicular to the weave on the second layer. The carbon sheets, PCM bags, and flow channel material are assembled under a nitrogen environment to prevent the modified carbon sheets from adsorbing water. Two Lexan polycarbonate pieces are placed on the top and the bottom of the stack and bound together with duct tape.

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